

Art Unit: 1715

1. Applicants have amended (8/30/10) their claims to clarify their process by removing inadequately supported & undefined relative term "stable" (i.e. removed the 112 first & second rejections with respect this term); to clarify the first treatment step (i) & second treatment step (ii) language; and to explicitly require their process of producing the conditioning effect to have at least two steps having the specific sequence of first crosslinking some surface of the substrate being treated, then either plasma modifying or plasma depositing on that crosslinked material of the substrate surface, thus excluding processes that produce both effects simultaneously (i.e. essentially one step that causes both crosslinking & modification via plasma) or processes with the opposite order, which employ no plasma modification or deposition after crosslinking, however any number of steps or techniques can be employed with these two steps before, during or after them, due to the "comprising" language employed in all three independent claims 1, 2 & 13. Note the amendment adding "comprising" to both treatment steps of independent claims 2 & 13 is considered supported by the "said conditioning effect comprising..." of original claim 1 & emphasizes the above comments with respect to any number of other possible steps or the like, plus is not considered to create any necessary difference in scope in relationship to independent claim 1. Also as amended independent claim 13 is considered to cover essentially the same scope as independent claim 1, with only semantics differences, especially considering that the description of the substrate as being capable of supporting a coating applied thereto, for a generic undefined coating is not considered to make any determinable difference, since the limitation describes virtually any article, anything large enough to have material that is crosslinkable, can be coated (i.e. a nanoparticle of cross-linkable material, the Earth that comprises cross-linkable material, etc. are all capable of supporting coatings).

Also note that technically, this very broad and general process sequence claim language does not exclude this two-step sequence from being a mechanism occurring when plasma treating a crosslinkable surface, as there is no limitation with respect to length or scale of the sequence's timing; i.e. a mechanism

Art Unit: 1715

where a plasma condition or species first causes 2 molecular structures to crosslink, then reacts that crosslinked surface with a another plasma species. However, unless specifically a reaction mechanism is detailed or sufficiently discussed in a reference, it is often difficult or impossible to determine whether or not such a mechanism is necessarily occurring in a particular process, even though it is likely to be extremely common occurrence when plasma treating many polymeric surfaces, especially any that are incompletely cured. Also note that further curing by crosslinking in a plasma, a previously partially crosslinked surface, is not excluded by the amended claim language, thus a pulsed plasma that causes crosslinking, where each pulse may be considered a step would read on the claimed treatment sequence.

It is noted that with respect to a **product** (i.e. claim 23) the order in which crosslinking of the generic unspecified crosslinkable material & generic unspecified plasma modification or even plasma deposition occurs, will produce no discernible distinguishable structural features, since for this unspecified material crosslinking before or after can produce identical structure, especially considering that crosslinking does not necessarily require the surface to be exposed. It is further noted that dependence of claim 23 from new claim 26, which requires the crosslinking to be "only to a limited depth below an external surface of the substrate", makes absolutely no difference in this analysis, since any depth to which crosslinking occurs (i.e. a fraction of the substrate thickness or the entire thickness) represents a limit, thus it is a "limited depth...". Also, since what sort of plasma modification occurs is all-encompassing, i.e. unspecified, it is thus inclusive of plasma etching, which is a modification of the surface; therefore plasma etching to a greater than what ever limited depth crosslinking occurred will leave a substrate made of identical material to the initial substrate, but only thinner with altered surface microstructure (i.e. modified surface property, smoother rougher or simply different). So the claimed product encompasses products that may be essentially identical to the starting products, especially considering for a generic cross-linkable material of no particular initial surface condition or initial

Art Unit: 1715

thickness, molecularly altering the surface or thinning the material, it does not produce any distinguishable features from the initial generic condition.

2. **Claims 1, 3 & 9-10 & 25-26 are objected** to because of the following informalities:

in **claim 1** as amended, it is noted that "a cross-linkable material" is introduced in line 3, however subsequent recitations of "cross-linkable material" in lines 5 & 6 employ no article to show antecedence to the preceding term of line 3, however as all of these are in reference to material at some substrate surface, whether the substrate includes one or many different crosslinkable materials at various surfaces can all be considered encompassed, thus this is an objection, not a rejection.

It is noted that with respect to **claim 3** that technically "the generation of the plasma" lacks antecedent basis, as independent claim 1 has no limitation with respect to either "generation" or to any specific "plasma", since all instances mentioning plasma, the word is used as an adjective, i.e. "plasma modification" or "plasma deposition", however since in order to perform a plasma modification or to perform plasma deposition a plasma would have had to be generated & since claim 3 provides context for when the plasma using claimed precursor gas or liquid may be employed consistent with independent claim 1, this is an objection, not a rejection. It is also observed with respect to claim 3, as discussed in preceding prosecution, "said precursor gas being a noble, inert...gas" is considered to read on noble gas = inert gas (synonyms), where precursor is considered just a adjective modifier adding no necessary meaning to the claim limitation, since noble or inert gases are not actually being reacted to form a part of a deposit or part of a surface modification, but being used to induce them or cause reactions (i.e. cause crosslinking, etching, etc.) in a way that is NOT generally considered to be providing a "precursor".

In **claims 9 & 10**, the limitations of "the power" lack proper antecedent basis, as they have not previously been introduced, noting that it would be appropriate for "power" to be introduced in these terms without an article, thus subsequent references to "the power" in sequentially dependent claims, a leavened & 24, respectively, would be showing appropriate antecedents to the initial introduction.

Art Unit: 1715

In **claims 25 & 26**, the limitations are discussed with respect to "**an** external surface of the substrate" (emphasis added), however independent claims 1 from which these claims depend already introduced this limitation, hence the incorrect article has been employed. As the original term in the independent claim would appear to encompass all possible external surfaces, the dependent claims' limitations do not appear to be able to refer to surfaces not already encompassed by the initial limitations, thus this is an objection, not a rejection.

Appropriate correction is required.

3. **Claims 11, 14-18, 22 & 24** are rejected under 35 U.S.C. **112**, **second** paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 11** as amended depends from claim 9, which is directed to "the first treatment step (i)" (emphasis added) having power "in the range 0.01 Watts to 500 Watts", however claim 11 is requiring "the power applied during either or both the first treatment step (i) and the second treatment step (ii)" however the only previously introduced "power" is employed in step (i), thus this claim limitation as amended lacks clarity with respect to further limiting step (ii). The examiner presumes that new claim 24 which now depends from claim 10 & is providing limitations with respect to step (ii) was intended to replace the option in claim 11 that is now confusing.

Independent claim 13 has been amended to require "said substrate... comprising cross-linkable material at an **external** surface or an **internal** surface or at both **external and internal** surfaces" (emphasis added), however depending **claim 14** also has references to surfaces, which are referred to as "the exterior surface" (emphasis added & lacks antecedent basis, possibly due to inconsistent terminology) & "said bulk matrix exterior and interstitial surfaces" (emphasis added & partially lacks antecedent basis), such that it is unclear whether the external surfaces of the independent claim are intended to be the exterior surfaces of this dependent claim & similarly there is an unclear relationship

Art Unit: 1715

between internal & interstitial surfaces. The examiner also observes that while one might assume that the probable intent is for the independent claim 13's "cross-linkable material" to be the composition of the "bulk matrix", the claimed language does not actually necessitate this relationship, due to the lack of limitations associating the different terms of the claims.

In claim **17 & 18**, while the claims initially states "wherein the first treatment step (i)..." or "wherein... step (ii)..." , respectively, they both go on to refer to "**the effect of said step**" (emphasis added), which is indefinite, as there are plural steps previously explicitly claimed. Thus, "**said step**" does not necessarily refer to either step (i) or step (ii) specifically, although the initial part of these claims implies that the named step is intended, as it is not necessitated, so any necessary meaning of these claims is unclear. Also note that technically "**the effect**" is required by use of the article "the" to have antecedents to "said conditioning effect", which is the effect of two or more steps not a single step, thus serves to add additional uncertainty to these amended claims. *On the other hand*, as discussed above, the examiner notes that the effect of these dependent claims is negligible with respect to the invention, since the requirement "is controlled to be applied to a limited depth of the material below the external surface" encompasses all possible depths from minimally below the surface to the entire thickness of the material, since any depth reached is a limited depth.

**Claim 22**, dependent from independent claim 1, has been amended to recite "wherein the substrate is a water absorbing resin", however it is unclear whether this requirement is referring to the substrate before it is treated with the claimed steps, sometime during the different treatment steps, or the final results of modified surface properties on the substrate; i.e. it is unclear **when** this claim limitation is intended to be required: at all times in its existence, or only at some more limited & unspecified time. It is the cross-linkable material of which the untreated substrate is made intended to be the water absorbing resin, or is it the resultant modified substrate surface material, or what? For this claim as presently written, any possible encompassed option may be considered for purposes of examination over prior art.

Art Unit: 1715

In new **claim 24**, "the first (i)" lacks any antecedent basis due to inconsistent nomenclature, since while there is a step labeled (i), there is no " first (i)", hence the examiner will assume for purposes of examination that the intent was -- the first step (i) --, which is consistent with other claim nomenclature & phrasing.

4. **Claims 1-26** are rejected under 35 U.S.C. **112, first** paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicants have amended all their independent **claims 1, 2 & 13** such that the second treatment step (ii) specifically requires either plasma modification of any one of the options for surface crosslinking of step (i), or plasma deposition onto any one of the options for surface crosslinking of step (i); i.e. these options include only crosslinking internal surfaces of the substrate, i.e. surfaces that are not & cannot be exposed directly to the plasma of step (ii). And while there are some plasma processes that are known to be capable of treating the interior pores in foams, particularly where very small dimension plasma species that can infiltrate through the surface of a porous material, such as oxygen ions or the like; applicants claims as amended are specifically claiming that one may be plasma depositing on the interior surfaces, which encompasses plasma polymerization & like, therefore it is unclear how applicants are performing such an operation of depositing on the interior surfaces inclusive of the scope claimed, i.e. coating surfaces that have no direct exposure to the plasma for performing plasma deposition operations, such as plasma polymerization, as the present claims as amended currently encompass. Therefore, the enablement for performing this process as claimed is not apparent.

The examiner notes that original claim 1 due to its multiple alternative language encompassed such an option as discussed directly above, although not as obviously as the presently phrased claims, thus this amended claim language is not new matter, however original claim 1 did not provide any means

Art Unit: 1715

or directions for accomplishing coating of interior surfaces as claimed, hence does not provide enablement therefore. Further review of the specification found no enablement to address this problem.

5. **35 U.S.C. 101** reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 1-3, 13-14, 23 & 26** are rejected under **35 U.S.C. 101** because the claimed invention is directed to non-statutory subject matter. Applicants have amended their claims in such a fashion that they are so broad as to read on **naturally occurring phenomena**.

On **page 8** of applicants 8/30/10 response (2nd page of Remarks) applicants argue that they are "claiming a secondary treatment of a preformed substrate (defined in paragraph [0020] as an article capable of supporting a coating) so as to modify the surface properties of that substrate. Thus, step (i) cannot encompass any crosslinking that occurs during production of the substrate itself". First of all [0020] of the substitute specification in the application file has no such definition, however the examiner notes that [0018] states: "**Typically** the material which is modified into a substrate which is defined as any article which is capable of supporting a coating applied thereto, so it will be appreciated that the same can be rigid or flexible, and can be any of a porous or nonporous substrate such as a film, powder or three-dimensional article" (emphasis added). While the "typically" could be said to make it ambiguous whether this very broad defining statement for a substrate is applicable to all substrates mentioned in the specification or is only typical applicable, but it is also reasonable to consider typically as modifying "the material", thus applicants' independent claim 1 & 13 substrates are identical, since including the "definition" in claim 13 makes no difference. However it is further noted, that the actual "definition" in the specification supports the examiner's discussion above in section 1, and very clearly does not support applicants' allegations argued in their Remarks (restated above), i.e. this "definition" does **not** require the substrate to be "preformed", but includes anything that can support any coating, i.e. water which can support a coating of oil is a substrate by applicants' "definition". Furthermore, absolutely nothing in this

Art Unit: 1715

"definition" has anything to do with crosslinking or not crosslinking, hence there is absolutely no prohibition for crosslinking occurring during a substrate's formation, especially considering most cross-linkable polymeric or polymeric precursor materials can be partially or completely cross-linked (i.e. the resin that forms amber takes millions of years to cross-link). Also, considering the "comprising" nature of the claim process, which means all kinds of changes can be done to the substrate in the process of producing broadly encompassing "said conditioning effect" that includes any modification of any surface property, thus does not exclude reshaping a "substrate that contains cross-linkable material, especially considering that internal surfaces of the cross-linkable material can be treated in either step, which must be considered to encompass reshaping to expose internal surfaces. For these reasons, read in light of both applicants' claim language & applicants' "definition" of substrate in [0018], applicants' arguments for removing the 101 rejection are not convincing for the claims as amended, as they may still be considered so broad as to read on natural processes.

As previously discussed, on considering the scope of applicants' claims as amended, the examiner was reminded of college astronomy classes where she learned that interstellar matter contains both plasmas & polymers. As indicated by the **Kaplan** reference "PLASMA, The Chemistry Tool for the 21st Century", naturally occurring plasmas include those in interstellar nebula, intercellular space & the Earth's ionosphere (table 1, first page). As indicated by discussion in **Vanysek et al.** "From aldehyde Polymers in Comets" (abstract; 2nd & last ¶ Introduction; section 2, 1st ¶ & table 1 p. L21, particularly entries with note #7; page L22-L23; etc., esp. conclusions on p. L26, with discussions of polymers in cometary meteoroids), complex organic molecules, inclusive of polymerizable materials & polymers (i.e. crosslinkable & crosslinked) are present in interstellar matter, including polymers with multiple heteroatoms (O &/or N), with indications that they also present in cometary dust, with polymers common in carbonaceous chondrites typical of cometary meteoroids, where the examiner notes that such cometary meteoroids will have passed through the Earth's ionosphere, thus a plasma, when arriving on earth, thus



Art Unit: 1715

creating plasma modified polymeric material where that polymeric material would reasonably have been expected to encompass at least some crosslinked content, as required by the present claim limitations. In other words, given the scope of applicants' claims either the cometary material containing polymers or polymer precursors, or the polymers or polymer precursors themselves may be considered substrates, and reaction of these polymers or polymer precursors to polymerize in cometary material read on claimed crosslinking, where any subsequent (includes continued) contact of such polymerized material in interstellar space or the Earth's ionosphere with any of the forms of plasmas, where that contact includes any reaction or physical effect (i.e. either further polymerization or decomposition or any alteration) reads on applicants' claimed step (ii) plasma treatment, and is sequential as required. Therefore, applicants' claims, **as presently written**, *remain* of such extraordinarily broad scope that they still read on such naturally occurring phenomena, thus for this extraordinarily broad scope may be considered to fall under **nonstatutory matter**.

Note that the interstellar matter interacting as discussed by Vanysek et al., includes oxygen containing gaseous compounds, and that cometary matter may be considered porous. While the examiner sincerely doubts the applicants had any intent to read on polymer & plasma processes that take place in interstellar space &/or the Earth's ionosphere, their broad claims with undefined relative term "stable" applied to essentially any polymerizable & polymer material in the universe, treated by unlimited types & effects of plasma, have made such rejection necessary, but hopefully will further applicants' understanding of the problems with the current scope.

*Further note with respect applicants' claimed **product** (see above discussion with respect to scope of claim 23), which due to the unlimited type of plasma modification which may occur to change surface properties, require in no particular or identifiable resultant surface properties (especially considering there were no defined initial surface properties & the new "limited depth" limitation places no actual limitation in scope), such that the claimed product reads on any substrate comprising cross-*

Art Unit: 1715

linkable material, or which is made from crosslinked material. Note that natural crosslinked materials or materials that are continuously undergoing crosslinking occur on earth, such as Amber, which is fossilized resin & copal, which is also fossilized resin that is a precursor to Amber, but merely not crosslinked enough to be Amber, thus either of these naturally occurring materials may be considered to read on the claimed product, since the claimed surface modification has no definable or distinguishable results which exclude consideration of any surface on any polymer or polymeric material which can or has crosslinked.

6. The following is a quotation of the appropriate paragraphs of **35 U.S.C. 102** that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

Art Unit: 1715

to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The **nonstatutory double patenting** rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. **Claim 23** is rejected under 35 U.S.C. **102(b)** based upon a public use or sale of the invention.

The claimed product of claim 23 is considered to read on every object or article that contains any material that can be or has been crosslinked (i.e. most polymeric materials), that has ever been made or used in the history of mankind, because method limitations in product-by-process claims only to limit the product in determining particular structures that the process necessarily produces. However, the claimed process' requirement that crosslinking of a material of a substrate occurs, is inclusive of any crosslinking that occurs for the entire substrate after its shaped in any fashion, as well as minimal surface crosslinking, plus anything in between (also see above discussion in section 1). Furthermore, as the process limitation of a second treatment is inclusive of plasma modification of no particular effect, thus includes all possible plasma effects that may occur to unlimited varieties of minimally crosslinked crosslinkable or crosslinked material, i.e. etching that may remove any surface crosslinking or a plasma modification that merely

Art Unit: 1715

rearrange surface molecules, a change modifying the surface morphology, but not necessarily in a distinguishable manner or in one that does not commonly exist even without plasma treatment (i.e. slightly smoother, slightly rougher, supply a temporary surface charge, etc.), such that there is no identifiable or distinguishing surface structure or property required by the claimed product. Hence, the product of claim 23 may be considered to read on essentially any object or article ever used or sold that contains material that can be or has been crosslinked (i.e. plastic toys, plastic silverware, plastic plates, etc.), especially considering that the "conditioning effect" of the method claim is only "comprising" the two sequentially claimed steps that produce no necessary structure, such that any results produced by these two steps can also be completely wiped out or changed in any way by virtually any operation which the process may further "comprise".

8. The 8/30/2010 amendment has required at the sequential order of first crosslinking some surface of the crosslinkable material of the substrate, then sequential a plasma treating (modification or deposition, however any necessary or specifically claimed curing, thus crosslinking in the claims 1-21 of copending Application No. **10/509,295** occurs after the plasma fluorination treatment (or potentially during, where the exact mechanism can not be necessarily determined), *thus for the claims as presently amended*, the provisionally rejection over method Claims 1-2, 7 & 13-19 on the ground of **nonstatutory obviousness-type double patenting** is considered overcome, however it is not considered that the product claim 23 is distinguishable from products that would be produced by the (295) process claims.

**Claim 23** is provisionally rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-21 of copending Application No. **10/509,295**.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the product formed by the process of copending (295)'s claims is not considered to have any distinguishing structure from products as may be formed from the present claims, which encompass fluorinating any substrate comprising crosslinkable materials that may or may not be crosslinked (see

Art Unit: 1715

various discussions of scope above). Particularly note that the curing in (295) is performed on a crosslinkable blend as discussed in claim 7 & as discussed in its claim 15, crosslinking has no effect on degree of surface fluorination or surface morphology, nor is any specific mechanism required for fluorination, although a plasma process may be employed to cause the fluorination (claim 14). Hence the product formed by this copending process claims forms structures totally encompassed by the present product claim. Note that as this case is a 371, where the product made by the process is not considered to be patentably distinguishable, this rejection remains appropriate & necessary.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. **Claim 23** is rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1+12-13 & 20-26 of U.S. Patent No. **6,551,950 B1** (Badyal et al.).

Applicant arguments (page 9 of 8/30/10 remarks) with respect to claim 23 being dependent from new claim 26, are ineffective, since requiring that the crosslinking is "only to a limited depth below an external surface of the substrate" does not limit what that limited depth might be, thus encompasses all possible limits including the entire thickness of a substrate or an entire thickness which encompasses crosslinkable material, etc. Hence, while applicants' intent might have been to require a variable degree of crosslinking, as is implied by their arguments, applicants' claims are not commensurate in scope with their arguments.

Although the conflicting claims are not identical, they are not patentably distinct from each other because as previously discussed with respect to the **product-by-process claim**, whether any initial crosslinking occurs within a single material substrate or a composite substrate (i.e. coated substrate) is irrelevant, since the structure of the substrate is almost unlimited (before processing some unspecified amount & portion need capable of crosslinking, but we not even be present or relevant to the final structure of the product), however if capable of crosslinking or polymeric already, whether any

Art Unit: 1715

polymerization or crosslinking occurred does not produce a distinguishable substrate, or product structure, as the substrate may contain any amount of crosslinking regardless of when that occurred and read on the claimed structure, which is minimal, as the process claims from which the product derives its structure has no necessary end results that require any specific structure. In fact, the claimed structure need not even have a coating, and may simply be any substrate, particularly any polymer containing substrate, as a polymer containing substrate has linkages between monomeric or oligomeric units, but the presently claimed product need not even be limited to this! In the **(950) patent**, the claimed class of substrates as fabric or clothing, would reasonably encompass polymeric fabric substrates whether natural or synthetic, however the plasma polymerized coating thereon is clearly a polymer that may be considered to encompass crosslinked structures, hence as applicants' claims encompass such composite substrate materials (among other things), whether or not the plasma deposition option in the process is employed, the resultant structure may be considered to read on the product claim. Furthermore, it is noted that on **col. 1, lines 22-35 in the background of (950)** the patent indicates that for coatings on **fabrics as claimed to be durable they must be cross-linked**, i.e. bonded, to the fabric substrate, thus read in light of the specification, it would've been obvious to one of ordinary skill in the art for the claimed plasma polymerized coatings to have a structure that is bonded via crosslinking to the substrate, as the disclosure recognizes this is a necessity for durability & one of ordinary skill in the art when making taught water repellent coated fabric substrates would have reasonably have been expected to have optimized their coating procedure for durability. *Applicants' 8/30/10 arguments suggest that the above conclusions appear "somewhat tenuous", because co-applied crosslinking resins & fluoropolymer are said to damage cellulosic fibers, however this does not negate the taught requirement for durable bond formation with the substrate by the applied polymeric compounds in Badyal et al. (950) process, nor suggest that no crosslinking is occurring between plasma applied monomers & fabric substrates which are polymeric, or between successive sublayers of plasma applied polymeric coating material. Applicants also mentioned*

Art Unit: 1715

*that there "is no suggestion in either reference that the level of internal crosslinking within the material of the substrate itself, prior to plasma polymerization would be anyway beneficial", however none of applicants' independent claims, nor the above rejection actually requires any internal crosslinking within the fabric, since an option in the claims is not required to be taught, if alternative options also claimed (even with respect to possibilities of internal crosslinking, such as new claim 25 relevant to the following rejection, the crosslinking need not be with respect to the entire substrate, but only that part of the substrate which is "comprising" the claimed "crosslinkable material").*

Applicant's 2/18/2010 arguments with respect to PN 6,551,950 are based on the limitations of process claim 1 that is not in this rejection, which limitations are virtually meaningless with respect to the product, because limitations independent claim 1 provide virtually no necessary structure, since even though one must start with a substrate that must have at least a smidgen of crosslinkable material, which must be cross-linked a subsequent plasma treatment, that last plasma treatment is required to produce **no particular or definable final effect**, thus no necessary structure is required in the product which in compasses any possible effect that any possible plasma could have on any possible substrate that has cross-linked material in it! Note the final plasma treatment could totally destroy every bit of a polymer or polymeric material in the initial substrate, and it would still read on applicants claimed the product (as well as process). Applicant's arguments show a complete lack of any understanding of the scope encompassed by their product by process claim, as well as by their own claimed language for the process.

10. **Claims 1-3, 7-19 & 24-26** are rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-19 & 24 of U.S. Patent No. **6,551,950 B1** (Badyal et al.), in view of **Seki et al.** (JP 03-14677).

It is noted that while applicants' 8/30/10 amendments to the claims have narrowed the claims by requiring crosslinking & plasma treatment in a particular order, the present claims continued reliance on extremely & extraordinarily broad limitations and concepts means that the claims ***as written*** are inclusive

Art Unit: 1715

of mechanisms & division of ongoing processes into steps, such as considering each pulse or groups of consecutive pulses as steps. Therefore, for the pulsed plasma process employing vinyl monomer of formula I of the (950) claims, a first plasma pulse or set of pulses forms a substrate comprising crosslinkable material; then a second plasma pulse or set of pulses that encompass causing plasma polymerization inclusive of crosslinking to and within the "substrate comprising crosslinkable material"; then a third plasma pulse or set of pulses cause plasma modification or plasma deposition via plasma polymerization to be previously pulsed plasma deposited & cross-linked surface, especially considering that like plasmas may be used for both claimed step (i) & step (ii). If applicants wished to exclude such a mechanistic or sequential view of pulsed plasma treatments & depositions, applicants should put limitations with a bit more substance in the present claims. Note if the "crosslinkable-material", which the substrate comprises, is considered to be a plasma polymerized sublayer from a first pulse or set of pulses, it may be considered polymerize throughout the material as recited in new claim 25, since *as written* this claim limitation is only with respect to some particular crosslinkable material that the substrate comprises, not necessarily the overall total thickness of the substrate.

As previously set forth, the **Badyal et al. (950) patent's claims** overlap with options of the current claims by plasma depositing a polymer layer to form oil &/or water repellent coatings on a substrate inclusive of polymeric materials, fabric, etc., which polymer layer may be formed from a fluoride containing gas &/or an unsaturated monomer having a sulphoanamide group (i.e. the gaseous monomer may be nitrogenous), using a pulsed plasma techniques, which may employ a high-frequency voltage, thus encompasses either RF frequency or microwaves, and being pulsed can be considered non-equilibrium as it is in a constant state of change or fluctuation. Average power density is employed claim use of <10 W or <1 W in a 470 cm<sup>3</sup> volume (implies chamber space). **The patent claims differ** from the current claims in that they do not require two plasma treatment steps (*unless one considers each plasma pulse or set of pulses to be a plasma deposition of crosslinked material step*), with the first plasma



Art Unit: 1715

causing crosslinking, or an initial step causing crosslinking by any means possible, followed by plasma treatment inclusive of the plasma deposition of the (950) claims. Plus, the (950) claims do not specifically mention the crosslinking occurring in the substrate material, **however** as discussed above in section 9, read in light of the (950) specification such crosslinking would reasonably have been expected to occur &/or would have been obvious to optimize in order to produce known desirable durable coating structures on claimed polymer &/or fabric substrates. Also (950) does not specifically require a sequence of treatment steps that employs both a step (i) that may or may not be plasma, but specifies crosslinking & a step (ii) that requires some sort of plasma treatment, however as seen in **Seki et al.**, as discussed in the English abstract, disclose a sequence of plasma steps treating a polyester-based fiber substrate material with a low temperature gas plasma, where the gas may be fluorine containing  $C_2F_4$  or  $C_2F_6$  (i.e. a fluoride), or ethylene or a silane gas, in order to deposit a polymer film on the fibrous material. Thereafter, the polymer film is treated with a non-polymerizable gas (e.g. Ar, He, etc.) to crosslink the plasma deposited film.

*It was previously discussed that the plasma polymerized deposition of unsaturated monomers, optionally fluorinated, to create oil &/or water repellent coatings, such as fluorinated polymeric layers onto polymeric fiber substrates (i.e. fabrics as is claimed by in (950), are analogous to plasma polymerized polymer films deposited on fiber of Seki et al., thus providing **the reasonable expectation that the Badyal et al. (950)'s claims pulsed plasma deposited polymer** coating may be advantageously further plasma treated using gases, such as Ar or He, to enhance crosslinking of the polymer deposit in order to enhance bleed resistant of the dyed fiber/fabric material, which would be consistent with the desire of the (950) patented claims to form water repellent coatings surface & possible coating of fabrics. Furthermore, while crosslinking after plasma deposition is no longer claimed due to the 8/30/10 amendments, neither is such crosslinking excluded, plus informing plasmas of monomer gases or vapors as claimed by (950), one of ordinary skill in the art would reasonably have employed typical &*

Art Unit: 1715

*conventional carrier gases, i.e. inert gases such as Ar, which as demonstrated by Seki et al., would reasonably have been expected to affect crosslinking as asserted above by the examiner with respect to polymeric material deposited on the previous plasma pulse, thus demonstrating a reasonable expectation of the occurrence of a bub asserted crosslinking. It remains noted that, such further treatment of the pulsed plasma deposited halogenated/fluorinated polymer layers would've been obvious to one of ordinary skill in the art in order to insure adequate adhesion/crosslinking/bleed resistance or the like of such coating materials on fibrous polymer substrates, where routine optimization for particular polymeric materials & plasma conditions would have been expected to optimize such process, including use & optimization of carrier gases for delivering monomers employed for plasma polymerization & optimization for expected crosslinking occurring during the pulsed plasma deposition.*

Also note that the fabric substrates of either of these references would be considered poor substrates, without even considering applicants' extraordinarily broad range of what they call "porous".

Applicant's 2/18/2010 arguments that differences were not pointed out are not understood, since discussions of differences & obviousness thereof were previously & remained found throughout the rejections.

11. **Claims 1-3, 7-19 & 23-26** are rejected under 35 U.S.C. **103(a)** as being obvious over **Badyal et al. (6,551,950 B1  $\equiv$  WO 98/58117)**, in view of **Seki et al. (JP)**.

With respect to the applied reference **6,551,950 B1** has a common inventor (Jas Badyal) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR

Art Unit: 1715

1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

See discussions above in **sections 9**. Also note that the equivalent PCT reference has equivalent teachings to Badyal et al. (950), and that in the body of the specification of Badyal et al. (950), see (≡ paragraphs in (WO)) the abstract; figures 1-4; col. 1, lines 1-60, esp. 22-35; col. 2, line 65-col. 3, line 10 (non-equilibrium plasma) & lines 11-67 for suitable monomeric organic compounds to be employed in the plasma; col. 4, lines 6-18, which discusses substrates such as particular fabrics possibly previously treated, thus consistent with dyed; col. 4, lines 19-61 for plasma deposition parameters and techniques, per strictly specifying routine determination of parameters depending on substrates and nature of polymer been deposited (lines 20-24) & the pulsed plasma polymerization technique providing well adhered coatings with greater levels of structural retention (lines 49-56), which the examiner considers to suggest the taught no need for durable bonds with the substrate, i.e. crosslinking with a polymer substrate; col. 4, lines 65-col. 5, line 3 specifically suggesting the previously described pulsed plasma polymerization techniques to cause will adhere at coatings be applied to fabric substrates; col. 6, lines 1-19 demonstrating that the plasma polymerization process is not just causing absorption of monomers on the substrate, which the examiner considers to suggest bonding to the substrate, which for taught polymer substrates would reasonably have been considered cross-linking to the substrate. It is further noted that Exs. 2 & 4 are directed to cotton fabric substrates (i.e. cellulosic or natural polymer substrates) where col. 8, lines 65-68 note the coatings have good durability (e.g. suggesting cross-link thereto); and where Ex. 5 (col. 9, lines 1-35) is to a silicone coated acrylic/nylon fabric, which is pulsed plasma treated with a fluorinated acrylate monomer & the fabric subjected to durability tests & comparison to a like piece of fabric with the

Art Unit: 1715

monomer is grafted thereto (air plasma followed by vapor deposition, noting that grafting is a crosslinking connection with the substrate), where the polymerized plasma fabric shows enhanced water repellency & durability in comparison to the graph polymerized sample.

For reasons as discussed above, it would've been obvious too one of ordinary skill in the art to perform the Seki et al. non-polymer gas plasma post-treatment on the plasma polymerized initial coating in order to perform further crosslinking to improve sealing characteristics (e.g. bleed resistance, etc.) of the initially applied plasma polymer.

As previously noted, while Seki et al. does not indicate that crosslinking to the polyester fiber substrate occurred during the initial plasma polymerization deposition process, Badyal et al. ((950) or (WO) on col. 1 or the paragraph bridging pages 1-2 , respectively) in their background indicates that durable polymeric coatings on fibers require bonding (e.g. crosslinking) to the fiber substrate, hence as Seki et al. is interested in the durability of their dye treated fiber (e.g. bleed resistance), it would've been obvious to one of ordinary skill in the art to optimize Seki et al.'s generic low-temperature plasma to employ plasma parameters, such as useful ones suggested by Seki et al. for pulsed plasma polymerization techniques as a starting point for suggested routine experimentation, to provide optimization of the initial plasma polymerization step to ensure crosslinking with the polyester fiber substrate, in order to ensure suitable durability to the resultant product.

12. **Claims 1-3, 7-16 & 22-24** are rejected under 35 U.S.C. **102(b)** as being anticipated by or, in the alternative, under 35 U.S.C. **103(a)** as obvious over **Badyal et al.** (6,358,569 B1), noting Hawley's Condensed Chemical Dictionary, as a teaching reference.

**Claims 4-6 or optionally 1-19 & 22-26** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Badyal et al.** (6,358,569 B1), alone or in view of **Badyal et al.** (6,551,950 B1  $\equiv$  **WO 98/58117** ), noting Hawley's Condensed Chemical Dictionary, as a teaching reference.

Art Unit: 1715

In applicants' discussion on page 14-15 of the 8/30/10 response, applicants continue to read requirements into their claim language, which are not present & have never been present. Applicants' "substrate" is so generic as to include any initial substrate & any composite substrate, including a polymer substrate with a layer deposited thereon, via any means; where that layer may account for the "comprising a crosslinkable material", or the substrate might, or both might, etc., etc., etc. Nothing in applicants' claims excludes employing plasma deposition in creation of the substrate; nor do applicants' claims limit what is crosslinking with the crosslinkable material, i.e. if the cross-linking is all between parts of the substrate or with a deposited material or some mixture thereof, thus any possible options for cross-linking of or with a crosslinkable material of any substrate are encompassed, such that material deposited via reactions that encompass crosslinking to the substrate are encompassed by "the material crosslinked in step (i)"; nor do applicants' claims prohibit a practitioner from buying a substrate, which reads on applicants' "substrate comprising crosslinkable material", where they purchased substrate has already had the first treatment performed thereon, since when & where crosslinking of applicants' broadly claimed "substrate" occurs before the second treatment step (ii) involving plasma, is unlimited, especially in the independent claims. Applicant's arguments do not even appear to be based on applicants' actual claims or actual limitations therein, as they continually discussed requirements that are not necessarily present. While the claims may *encompass* options applicants discuss, *they are **not** limited thereto*. Applicants discuss "level of cross-linking", however no particular level of crosslinking is ever required, merely that some crosslinking occurs on some surface interior &/or exterior, but no particular amount, which is even broader when considered with respect to the broadly claimed substrate. Therefore, applicant's allegation that "the examiner is relying on incorrect, factual predicates in support of the rejection", is itself entirely incorrect, as applicants' arguments are not commensurate in scope with their claim limitations.

In **Badyal et al.** (569), particularly see the abstract; figure 5; **col. 1**, lines 3-68+, esp. lines 28-30 relating to treatment of a porous or microporous substrate; lines 30-36 employing pulsed electrical &

Art Unit: 1715

pulsed gas to form an **adherent layer of unsaturated** carboxylic acid polymer on the substrate (i.e. *has formed a composite substrate that comprises crosslinkable material & has caused crosslinking during plasma pulses in that substrate*), **then** attaching perfluoro alkyl groups to the polymer surface; lines 37-44, where the pulsed gas in the plasma may be an acrylic acid polymer precursor by itself, or may be used with a pulsed process gas that may be oxygen, or noble or inert gas or N<sub>2</sub>, etc.; lines 55-56, where the plasma power is preferably 1-100 W or 1.5-7 W; lines 57-61 teaching substrate material may be carbonaceous (e.g. natural materials such as cellulose...), synthetic, ceramic or metallic or combinations thereof (*hence also encompasses substrate materials comprising crosslinkable material*). Col. 2, lines 33-58 teaches superior surface coverage with pulsed gas alone or in combination with RF pulses, with application to filtration, chromatography & medical devices, mentioning low-cost **thermoplastic substrates coated, porous or microporous substrates**, or polymers such as fluoropolymers like PTFE that may themselves be films (line 42), or **polyethylene** (line 44) i.e. a polyolefin) & **cellulose of polyurethane foam** substrates having absorbent natures for use in sanitary, wound dressing products, etc., when coated by the taught process sequence, to form a final product with a superhydrophobic surface layer (line 50-54), *thus these polymeric substrates & products are considered to encompass water absorbing resins of various degrees of absorptivity at different times in their lifetimes*; col. 3-4, esp. parameter descriptions for figures & col. 3, lines 34-45 & 60-col. 4, lines 7 & 47-67 teach various sets of plasma parameters & operational conditions, with col. 4, lines 47-67 discussing the desirable use of oxygen gas for improved retention of monomer structure (i.e. oxygen retention, thus creating hydrophilicity at this stage of the process); col. 5, esp. lines 1-12 & 36-41 discussing an exemplary first treatment employing pulsed gas & electric pulses for plasma polymerization in the presence of oxygen, thus increasing the oxygen content on the substrate surface **as well as depositing the initial layer & teaching to optimize the subsequent surface F derivatisation**; and col. 6, lines 11-17 for the option of using a further cold plasma step to fluorinate (i.e. plasma modification) the deposited plasma

Art Unit: 1715

polymerized polymer layer using SF<sub>6</sub>; and claims, particularly 1-2, 9-10 & 12-13. Note these teachings are **considered to read on applicants claims' option of employing a combination of step (i) ≡ the adherent plasma polymerization deposition is on a taught polymeric substrate, which would create crosslinking between substrate & plasma deposit layer & step (ii) ≡ techniques of plasma fluorinating of a crosslinked material, that may employ a pulsed RF plasma** (i.e. non-equilibrium) & pulsed gas (i.e. plasma modification thereof using a fluoride containing gas). Note if the initial substrate can have material crosslinked to it, it comprises crosslinkable material. Also, as discussed above, pulsed plasma is due to their pulsed nature can easily be considered to create steps or substeps, layers or sublayers with each pulse or set of pulses, thus further relating to substrates comprising crosslinkable material & crosslinking thereof.

While **Badyal et al. (569)** do not explicitly discuss crosslinking of their plasma polymerized acrylic acid polymer with taught polymeric substrates, employing the taught pulsed plasma with a polymeric substrate would inherently create active sites on the substrate to which the plasma is applied, such that the polymer monomers plasma polymerized onto the substrate during the taught plasma process would **inherently form at least some crosslink bonds to the surface** when forming the **taught adherent** layer, as to be adherent would require bonds to be formed between the deposit & suggested polymer substrate, such as the taught polyethylene or the like (i.e. bonds formed between the polymer chains of the polymer substrate & the polymer of the polymer film being formed would have been expected to include crosslinkages considering suggested substrates were already polymerized), thus reading on the claimed step (i) treatment required to cause crosslinking of substrate material, inclusive of on the surface (e.g. the exterior). Furthermore, each plasma pulse may be considered a plasma treatment & the reactions of each plasma pulse would reasonably have been expected to include crosslinking with deposited polymeric material &/or substrate, as plasmas in general cause more than a single type of chemical linkage to occur, hence would have been inherently inclusive of at least some crosslinking.

Art Unit: 1715

Alternatively, as Badyal et al. (569) teach that the plasma polymerized layer **should be adherent** & teach usages such as in filtration, chromatographic & medical devices where separation of the deposit layer would be detrimental, hence it would've further been obvious to one of ordinary skill in the art to optimize their plasma polymerization process in order to maximize bonds between the plasma polymerized layer & taught polymer substrates in order to produce taught adherence &/or strengthen or increase the degree of adherence to ensure reliable operation, which optimization of adherence would have reasonably included crosslinking of the applied unsaturated polymeric, to itself & to the polymeric substrate.

**Furthermore**, whether one considers such crosslinking inherent &/or obvious with respect to taught adherence of the plasma polymer layer, for taught use of substrate such as polyethylene (col. 2, line 44 & col. 3, line 32), this generic polyethylene encompasses substrates that have been crosslinked (meets step (i) requirement of all independent claims), as can be seen by the discussion of polyethylene on pages 933-934 of Hawley's Condensed Chemical Dictionary, which indicates that various types of polyethylene are crosslinked, inclusive of when a substrate is of molded polyethylene (i.e. substrates comprising crosslinkable material), then is crosslink after shaping (crosslinking treatment), thus taught polyethylene films would've included substrate material that had been treated to cause crosslinking. Alternatively, it would've been obvious to employ the variety of polyethylene that had been treated for crosslinking, as a typical & conventional form of taught substrate material. *Note this option reads on crosslinked throughout the crosslinkable material.* Also the dictionary discussion of polyethylene indicates that polyethylene undergoes crosslinking with exposure to various radiation (e.g. electron or  $\gamma$  radiation) & chemical environments, thus as plasmas have energetic free electrons which as the plasma impinges on the substrate would bombard the substrate, thus providing evidence for the for the above asserted inherence of crosslinking occurring when plasma polymerizing on polymer substrates such as polyethylene that remained capable of crosslinking. *Note that plasma polymerization onto a crosslinked*



Art Unit: 1715

*molded polyethylene substrate would read on step (ii) being performed after step (i) for claims 1 & 13, with or without above pulsed plasma considerations.*

Optionally, it would've been further obvious in view of teachings of **Badyal et al.** ((950) or (WO 117)) in their background concerning the importance of bonding between analogous coating & substrate material.

It is noted that the teachings of Badyal et al. (569) may use both pulsed plasma & pulsed gas on either their first or second plasma process, thus may be considered to read on any of these dependent claim processing parameters in their various possible interpretations. Alternatively, the majority of specifically discussed process parameters in (569) are directed towards the initial plasma polymerization deposition process, where the specific example of plasma fluoridation does not provide specific power parameters, however it would've been obvious to one of ordinary skill in the art to employ routine experimentation to determine optimal parameters for achieving the taught fluorination effect, where parameters as taught for the initial plasma polymerization reaction would have been a reasonable starting point for routine experimentation to optimize for the next stage of plasma treatment, given that the previously applied surface coating may be considered to be a feature in common.

With respect to claims 4-6, they have clarified step (i) or (ii) nomenclature, where the steps could still be considered applicable to effects in sequential pulses in the process of Badyal et al. (569), since these steps & the independent claims do not preclude repetition of plasma producing the same affect multiple times, thus since the use of oxygen admixed in the pulsed gas & pulsed plasma deposition process increases oxygen functionality retention, i.e. hydrophilicity, which may also be considered to be acting to oxidize in order to provide such retention, therefore the acrylic acid polymer deposited would be a hydrophilic layer. Note both oxygen gas & acrylic acid monomers are oxygen-containing chemicals. Also, Badyal et al. (569) teach use of oxygen or noble or inert gas or nitrogen with their acrylic acid polymer precursor, but they do not specify mixing these process gases, however it would've been obvious

Art Unit: 1715

to one of ordinary skill in the art to employ mixtures that include nitrogen or inert or noble gases, as such is a standard plasma processing practice, typically employed for optimizing pressures or proportions of individual components within a desired pressure range, especially considering that these gases are typically desirable gases for plasma stability & may generally be employed without undesirably affecting the composition of the applied coating.

The examiner notes that oxygen gas used in the plasma will inherently produce various oxygen species, inclusive of ozone, thus such an oxygen containing plasma will have at least some oxidizing occurring due to ozone.

With respect to the wide range of claimed void volumes of 0.01-99 %, it is considered that the taught porous or microporous substrates, while not been described with a particular void volume, would necessarily be encompassed by this extraordinarily broad range, and necessarily in comp is the existence of pores in the void volume structure. Alternatively, it would've been extraordinarily obvious to one of ordinary skill in the art would employing taught porous & microporous substrates in the taught process, to employ claimed void volumes, as it would be virtually impossible not to.

Any & all of the above discussed alternatives reading on applicants' first treatment step (i) to cause crosslinking, are relevant to the claims as written, especially considering the broadly-encompassing "substrate comprising a crosslinkable material" & "comprising" language. If applicants do not want their claims to read on such broad & diverse processes and procedures, they need to specifically claim what they really intend to do.

13. **Claims 1-3, 8, 13-19, 23 & 26** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Schultz Yamasaki et al.** (6,156,394), also noting Hawley's Condensed Chemical Dictionary, as a teaching reference.

Applicants have amended their claims to remove "stable" that had no clear scope for "stable conditioning effect", and amended the requirements to read "applying a conditioning effect to a substrate

Art Unit: 1715

so as to modify the surface properties of the substrate", where what the modification is, is unlimited, but the process of achieving it is required to contain at least two sequential steps; first crosslinking at least some crosslinkable material of a substrate which is on an exterior &/or interior surface, where the substrates only defining feature is that it somehow comprises crosslinkable material. Then, the claims require performing any type of plasma operation on that crosslinked material. It is noted while the claims require the crosslinking & the plasma treatments to be performed in the process of creating the "conditioning effect" which modifies surface properties, it does not necessarily require either of these steps to be what actually produces any final or resultant modification of the surface properties.

It was previously discussed, the material being treated has been required to be crosslinkable, but **Schultz Yamasaki et al.** was already teaching using "polymeric optical **substrates**...(i) acrylate containing polymers such as. polymethylmethacrylate... and other acrylics or acrylate containing polymers sensitive to photo or thermal crosslinking, such as polyethyl acrylate; (ii) polycarbonate; (iii) a variety of other polymers, including polyethylene terephthalate, polyimide, polystyrene, polyester, **polyethylene**, and a variety of different epoxy containing polymers; and (iv) mixtures and derivatives thereof" (emphasis added; col. 4, lines 7-16), thus explicitly teach crosslinkable substrate materials, used by the teachings of Schultz Yamasaki et al.. *Applicant's attention is further directed to*, the general teaching in Schultz Yamasaki et al. stating that the "manufacturing method comprises (i) providing a polymeric optical substrate; and (ii) **exposing the polymeric optical substrate to electromagnetic radiation having a wavelength of about 30 nm to about 350 nm**. The exposure of the polymeric optical substrate to the wavelength in this range of electromagnetic energy **substantially improves adhesion between a substrate and an optical coating deposited** on to the substrate following pretreatment...." (col. 2, lines 1-10), with the following paragraph indicating that this process "addresses the significant need for improved coated plastic optics by providing a method to achieve reliable adhesion of optical coatings onto polymeric substrates. The invention provides improved adhesion for even highly

Art Unit: 1715

curved or shaped parts which have been historically difficult to coat". It is noted that one of minimal skill in the radiation curing art would conclude from these teachings that the photoradiation taught to be applied to the optical substrates is causing cross-linking in the taught acrylic or acrylic containing polymers optical substrates that are photosensitive to cross-linking! However, since as previously discussed, the reference explicitly discusses the pretreatment of substrate surfaces causing cross-linking within the surface interface layer as a consequence of plasma pretreatment, including either direct plasma or remote radiation exposure from plasma, as set forth on col. 6, lines 13-34, any competent practitioner would understand that crosslinking is occurring as claimed in the Schultz-Yamasaki et al. process.

Applicants' page 11 recitation on 8/30/10 of one sentence in this paragraph that uses the word "suggest" to 'suggest' that Schultz Yamasaki is only speculating is not convincing of test results which "suggest" an atomic bond structure, are not evidence of that structure; especially as applicants' arguments have failed to provide any support for their speculative dismissal of taught evidence & especially while applicants' arguments are ignoring a following sentence which states "According to one method, direct plasma and remote radiation exposure leads to formation of a **cross-linked interface surface** of up to about 100 nm thick, possibly about 5 nm to about 100 nanometers....., depending on the specific treatment conditions" (emphasis added) is unconvincing at best. Applicants following arguments bridging pages 11-12, with respect to taught plasma depositions after taught pretreatment, only make a modicum of sense as based on applicants' ignoring the reference's explicit teachings of pretreatment causing cross-linking, thus these arguments are also at best ineffective. Applicant's phrasing or emphasis of "microwave" in their discussion of the examples indicates the possibility that applicants also lack the understanding that the microwave deposition is a microwave plasma deposition that follows plasma pretreatment, hence these examples are supportive of the rejection.

To reiterate, **Schultz Yamasaki et al.** teach improving the adhesion of optical coatings (e.g. plasma CVD deposited silicon nitride, etc.) on polymeric optical substrates via the exposure to

Art Unit: 1715

electromagnetic radiation having wavelengths of about 30-350 nm, which may be performed via direct exposure to **gas plasmas** of He, Ar or nitrogen, and **causes cross-linked bonds to form in the polymeric substrate surface**, so that there is consequently improve the adhesion at the interface with the subsequently deposited coating that may be plasma deposited (i.e. improve stability as compared to a non-previously crossed link substrate). The exemplary direct exposure plasma apparatus employs a microwave/RF dual frequency plasma system, where a negative DC substrate-bias voltage may be applied to cause ion bombardment from the plasma, where it's noted that this extraction of ions to bombard the surface may be considered a form of non-equilibrium plasma. Also, Schultz Yamasaki et al. teach that other useful direct exposure plasma apparatus may include simpler or more complex systems. Particularly see the abstract; figures 4 & 6-7; col. 1, lines 5-25; col. 2, lines 1-20+; col. 3, lines 10-26; col. 4, lines 1-20+ (substrates, inclusive of polyolefins) & 40-60; col. 5, lines 37-52; **col. 6, lines 13-35** (plasma/electromagnetic wave pretreatment resulting in changes in stoichiometry, increased resistance to acetone damage & **cross-linked bonds on surface**); col. 7, lines 15-44; col. 8, lines 11-21 & 35-50; examples, especially noting the PECVD of silicon nitride (col. 9, lines 28-39 employed in those the examples & Ex. 2, col. 10, lines 20-54; Ex. 3, col. 12, lines 20-32; Ex. 5, col. 14, lines 65-col. 15, lines 14; Ex. 6, col. 16, lines 15-32); and claims 1-5, 11-13 & 17-24.

Note that plasma power employed by Schultz Yamasaki et al. varies dependent on particular plasma process & gas, such as in col. 16, lines 1-32 microwave plasma employing ammonia or N<sub>2</sub>O using 150 W, or a biased RF pretreatment gas plasma of ammonia using 30 W, or an argon RF plasma employing 30 W or Ar in remote or direct microwave plasma of 150 W, with subsequent deposition of amorphous silicon nitride, which for plasma CVD thereof, as suggested in the reference via a silane ammonia mixture, would be deposition of a nitrogenate material with a nitrogen containing compound.

It was noted that whether a teaching causes cross-linking to occur to somehow change an absorbent property, or for some other purpose (e.g. increasing adhesion) is entirely irrelevant to the claims

Art Unit: 1715

as written, since the claimed process need only cause crosslinking to occur at some location with respect to the substrate material, where that cross-linking itself need have no effect on any absorbent properties. It was noted, improving adhesion can be considered to increase the absorbency of the coating material on the substrate, which is also a form of increasing stability of a final product. As the process of Schultz Yamazaki et al. change the characteristics of the substrate surface, the absorbency thereof will have been changed, and since the change to surface is desired, it may be considered "improved". Especially note that col. 6, lines 35-58 discuss altering the carbon/oxygen ratio on the surface (i.e. limited), which will inherently effect the hydrophobicity/hydrophilicity of the surface, thus the probability of polar or nonpolar liquids being absorbed on the surface, and enabling their adherence, which may be considered to read on being a stable effect under various possible conditions.

Applicants' 2/18/10 assertion that claims 1, 2 & 13 produce hydrophilic coatings (page 14 of 2/18/2010 response) was extraordinarily puzzling, since the word **hydrophilic** is in no way associated with any claim limitations in these claims, only mentioned in claim 4, thus it's 2 dependent claims 5 & 6, which were not and are not included in this rejection. Since the crosslinkable material claimed is completely generic, nothing that one does to it can be said to create any particular effect, let alone specifically hydrophilic! It was noted that applicants also cited page 7, paragraph 3 & page 12 paragraph 2 of the application as filed as teaching "stability of the crosslinked substrate is determined thermally or by solvent washing", however no such discussion was found at such a location in either the original specification or the substitute specification, however it is noted that the certified priority document discusses thermal stability of a polymer with respect to first & second steps, on its page 7, while page 12 relates to a paragraph discussed in a previous new matter rejection, which is specific to very specific two-step plasma process, which has never been claimed. Therefore, neither of these citations provided a definition for the lack of clear metes and bounds in the previous claims' "stable" requirement, nor any

Art Unit: 1715

necessary meaning to the actually claimed process, as they were not commensurate scope with what applicants had actually claim.

14. **Claims 1-3, 8, 10, 13, 17-19, 23 & 25-26** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Nguyen et al** (5,244,730).

**Claims 7 & 9** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Nguyen et al** (5,244,730).

Applicants' footnote on page 11 (confusingly not with the actual arguments with respect to Nguyen et al on pages 12-13 of the action mailed 8/30/10), with respect to claim 3 being required in the 102, to link with the independent claim 1 with claims 7-10, was correct, and the examiner apologizes for the typographical error, since for the claims as previously written was or discussed with respect to the taught oxygen plasma cleaning treatment, applicable to the claim 3 process. It is noted that in the previous claims, order of treatments was not required, & contain clarity issues affecting subsequent claims, however for the claims as now amended, provide clarifying claimed language & now require a specific order with respect to the cross-linking, then plasma deposition or plasma modification, so now require new variations of 102 or 103 considerations for these claims.

Note the 8/30/10 amended independent claims include the option of plasma modification of the material crosslink in step (i), which encompasses oxygen plasma cleaning (i.e. removal) of any-number of layers of crosslinked fluoropolymers, where one may name the chamber wall + at least the first fluoropolymer layer deposited thereon + any number of successive wall deposits except the last, as the substrate comprising crosslinkable material col. 3, lines 27- 55+). The plasma polymerized fluoropolymer layer that deposits on the named "substrate comprising crosslinkable material" is causing cross-linking with respect to that crosslinkable material (col. 4, lines 27-48; & col. 5, lines 48-59); then oxygen plasma removal is performed which removes crosslinked fluoropolymer (col. 6, lines 7-25) & includes the equivalent to the claimed crosslinked material. Thus, this process sequence is providing a

Art Unit: 1715

conditioning effect which produces a modified surface of the substrate, so reads on applicants' very broad & encompassing claimed language. Applicant's comments (page 12 of 8/30/10 response) with respect to Nguyen et al. being a relatively conventional plasma deposition process, is entirely the point of this rejection, and if applicants do not want their claims to read on conventional processes, then they need to put ***necessary*** requirements in their claims relevant to any novel features of their invention, which are not so cryptic and broad so as to encompass such conventional processes, as well as intended effects.

As previously discussed, **Nguyen et al** teach a process of plasma polarization of a **fluorocarbon layer**, where a plasma polymerized fluorocarbon layer is deposited on the **internal surfaces** of the plasma chamber or on the **external** surfaces of the walls in the plasma chamber, exemplified by a 2-stage plasma process using carbon fluoride gases (i.e. fluorocarbons), then followed by **use of the plasma chamber for plasma polymerization deposition on substrates**, which causes further deposition of the **plasma polymerized material** on the interior surface of the chamber (or exterior surfaces of the walls), as well as on the substrates being processed, where the deposition process is **taught to form highly cross-linked fluorocarbon films**. *In other words*, one has a substrate = chamber + coated a fluorocarbon layer, where subsequent plasma that deposits fluorocarbon layers, also treats the initial layer such that it is highly cross-linked itself & with the subsequent layer(s). Each successive use of the chamber = substrate to perform plasma polymerized depositions, also deposits on the chamber walls, thus causing further cross-linking of the initial fluoropolymer layer, plus of each successive deposition thereon, such that each successive deposition may be considered to read on both steps (i) & (ii), i.e. crosslinking, then deposition on cross-linked material.

Is further taught after sufficiently long periods of use (e.g. 10 hours) when deposited thicknesses of a fluorocarbon materials have built-up on the chamber, it is **cleaned by oxygen plasma** (i.e. uses O-containing "precursor" gas), then that the plasma deposition coating process for internal surfaces & use is



Art Unit: 1715

repeated, which cleaning reads on another claimed alternative plasma modification that reads on the claimed step (ii).

Particularly see the abstract; the figure; col. 3, lines 27-col. 4, lines 50+; col. 5, lines 57-67; col. 6, lines 7-25; an example 1 on col. 6. These teachings read on the first plasma polymerization step depositing a plasma polymerized layer which may be considered part of the substrate material for subsequent steps, with the next plasma polymerization deposition causing crosslinking therewith (i.e. step (i)), plus subsequent plasma polymerizations or oxygen plasma cleaning is being an unspecified number of step (ii) plasma modifications or plasma deposition of crosslinked material onto either in the plasma cleaned chamber surface or onto cross-linked plasma deposited material. As has been previously noted, the plasma depositions onto the plasma deposited fluorocarbon, would inherently be causing further crosslinking of the previously deposited polymeric material, thus it's also effectively inclusive of step (i) preformed both concurrently & in sequence with step (ii).

Note plasma treatment/deposition may be via RF plasmas, where power includes 100-1000 W (col. 4, lines 1-64), thus overlapping with claimed power ranges.

With respect to Nguyen et al (730) teachings of using gaseous polymerizable fluorocarbons including  $C_4F_8$ ,  $C_3F_8$ ,  $C_2F_4$ , and  $C_2F_6$ , as discussed in col. 3, lines 34-49 & col. 4, lines 37-48, fed into the plasma chamber at a rate of about 20-150 sccm, where typical pressures during the plasma depositions are about 100-200 mtorr, where RF frequencies of about 1-100 MHz, typically 13.56 MHz are employed, with working electrode using a range of about 100-1000 W & power densities typically about 0.05-4  $W/cm^2$  (col. 3, lines 57-68+ & col. 4, lines 49-68+), however Nguyen et al. differs from the claimed precursor gas in not teaching that their fluoride gases also contain oxygen- or nitrogen- containing gas, or an inert gas now however it is old and well-known in the plasma art to employ inert gases as carrier at gases & plasma gasses in plasma processing, both for sustaining the plasma & for optimizing reagent concentrations for plasma processing, hence it would've been obvious to one of ordinary skill in the art to

Art Unit: 1715

employ such common & conventional plasma gasses for their typical & conventional purposes, especially considering that for these claims as rejected, the claimed gases have no particular required effects.

15. **Claims 1-3, 8-10 & 13** are rejected under 35 U.S.C. **102(b)** as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Kamel et al.** (5,326,584).

**Claims 1-3 & 8-10, 13-19, 23 & 26** are rejected under 35 U.S.C. **103(a)** as being obvious over **Kamel et al.** (5,326,584), in view of **Schultz Yamasaki et al.** (6,156,394).

Applicants have argued that the examiner has not substantiated the claim that polymethylmethacrylates (PMMA), as plasma treated by Kamal would inherently have crosslinking produced, however their arguments are based on ignoring explicit the teachings of Schultz-Yamasaki et al., which clearly to anyone else, provide clear evidence of crosslinking occurring with analogous plasmas on analogous substrates, thus providing credible evidence of expected crosslinking in the process of Kamel et al., or alternatively provide reasonable evidence of obviousness & means to optimize adhesion via crosslinking. Therefore, applicant's arguments fail to be convincing as based on inaccurate statements. It is further noted that applicants' description of etching or cleaning actions as "teaching that the surface must effectively be destroyed in the process" (page 15 of 8/30/10 response), fails to recognize that a PMMA surface remains, i.e. one that may have atoms or molecules removed & bond structures rearranged, not crosslinking is rearranged bond structures.

The claims require first step (i) to be a crosslinking limitation applied to crosslinkable material which is at least a part of a substrate, with independent claims 1, 2 & 13, requiring the second step (ii) to be any plasma process *now required to be* applied to the cross-linked material of the substrate, instead of just the substrate generically, where the claims have been amended to require something about the process be a "conditioning effect", which acts "to modify the surface properties of said substrate", however in no way limits what the modification is (i.e. crosslinking, functionalization, etching of all crosslinkable or

Art Unit: 1715

cross-linked material, coating, etc.), where the claimed first step (i) & second step (ii), will be employed in producing the conditioning effect, but as claimed, do not necessarily define it.

As previously set forth, **Kamel et al.** (abstract; col. 6, lines 4-41; col. 7, lines 42-68; col. 8, lines 12-col. 9, lines 30+; examples, e.g. Ex. I + Ex. II; and claims 1-9) teach a process of **modifying the surface of polymeric substrates**, such as polymeric intraocular lenses of material such as PMMA, via a **sequence of plasma steps**, that include initially cleaning the polymer surface via a plasma etching or treated with **RF plasma** of gases that may be **nitrogen or ammonia** (if introduction of nitrogen is compounds is desired), or noble gases such as argon (for creation of active sites that do not produce new chemical groups). After cleaning/activation polymeric substrate, a **polymeric biocompatible material** may be applied via further radio frequency plasma treatment, i.e. a **plasma polymerized deposit**. Note that taught RF plasma powers include about 100-200 W or 50-200 W (claim 16 or col. 6, lines 60-65).

Kamel et al. while employing an initial nitrogen or Ar gas plasma on polymeric substrates, such as PMMA, in teaching a pretreatment activation of the surface that improves adhesion of subsequent coatings, do not discuss these plasma treatments as producing further crosslinking of the surfaces, however the energetic environment created by these *in-situ* plasmas would have inherently produced crosslinking in surfaces such as the exemplified PMMA (in acrylate containing material), or alternatively, the taught activation to create active sites would have been reasonably expected to have provided by optimization to create reactive sites in the taught acrylate material having unsaturation capable of crosslinking, which would reasonably have been expected to be inclusive of such bonding rearrangements due to the chemical structure of acrylates. Alternatively, Schultz Yamasaki et al., discussed above demonstrated that direct plasmas, inclusive of nitrogen plasmas & Ar plasmas, as well as He plasmas, **when used to treat PMMA substrates cause crosslinking thereof**, which provides improved adhesion for subsequent plasma deposited coatings, thus it would've been obvious to one of ordinary skill in the art to optimization of the plasma pretreatments of Kamel et al. (including use of suggested plasma apparatus

Art Unit: 1715

structures/techniques) to effect such crosslinking of polymeric optical lens surfaces, as treated by both references, in order to provide the advantages of improved adhesion of subsequent plasma deposited coatings desired by both references, with the advantage of good optical quality also desired in both references.

16. **Claims 1-8, 13-14, 17-23 & 26** are rejected under 35 U.S.C. **102(b)** as anticipated by or, in the alternative, under 35 U.S.C. **103(a)** as obvious over **Peyman et al.** (4,312,575).

**Claims 7, 9-10 & 15-16** are rejected under 35 U.S.C. **103(a)** as being obvious over **Peyman et al.** (4,312,575).

As previously set forth, **Peyman et al.** (abstract; figures; col. 1, lines 7-15; summary, esp. col. 4, lines 28-47 & col. 5, lines 3-11; col. 5, lines 41-col. 6, lines 57+; col. 7, lines 20-32 & 43-66 & Exs. I & II) teach a **coating process** for soft corneal contact **lenses**, which are oxygen permeable & can be formed of **silicone polymers, copolymers of silicon, polyurethane or other oxygen permeable polymeric material** suitable for contact lenses, with specific mention of use of copolymers or inter polymers preferred. The core of the polymeric lens is hydrophobic & is coated to **make it hydrophilic**, such that it is highly oxygen permeable & has a **long-lasting wettability** (i.e. stable structure capable of absorbing water) via a process using **glow discharge plasma polymerization** of at least one compound inclusive of **hydrocarbons &/or halogenated hydrocarbons** (including fluorine), where the plasma polymerization is performed to create a highly cross-linked coating, with the examiner noting for it to be highly cross-linked when deposited on the polymeric core, the cross-linking must inherently encompass at least some crosslinking to the polymeric core surface, as suggested lends substrate materials are inclusive of polymers having heteroatoms that would reasonably have been expected to cause/enable crosslinking in a plasma taught to deposit a highly cross-linked coating. A further **glow discharge treatment may be performed in an atmosphere of oxygen or oxygen + Ar to provide a highly hydrophilic surface to the resulting lens**. Note the heat plasma coating of the "ultra-thin, optically clear, lipid and permeable,

Art Unit: 1715

highly oxygen-permeable barrier coating comprising the reaction product resulting from any electrical glow discharge polymerization process" (col. 4, lines 32-40+) as discussed above is considered to read on applicants step by as amended (8/30/10), while the second plasma deposition process employing oxygen reads on both the possible options for applicants step (ii), plus employing an oxidizing plasma.

Also, Exemplary deposition processes include a 2 step plasma polymerization deposition, where the two main sides of the lens are coated first, then a subsequent deposition process may be performed on the edges of the contact lens core (Ex. I), where it may be considered that after the first deposition the substrate comprises cross-linked material, where coating of the second deposition is all on a part of the structure not previously deposited on, but would reasonably have been expected to be adjacent to & contacting the edges of the previous deposited layer & in its cross-linked material, therefore performing plasma deposition contacting at least some cross-linked material from the previous step. Thus, this procedure continues to read on possible meanings of applicants very broadly phrased claims, where some material of the composite substrate has been cross-linked by a previous step & is contacted by the success of plasma at least at some location. Also note that plasmas will inherently cause some degree of heating.

The glow discharge processes employed by Peyman et al.'s examples used 10 kHz power source to create the glow discharge, thus reads on an RF plasma, and while no particular values for power usage, i.e. Watts, were taught, it is specifically taught that the wattage used will depend on such factors as surface area of the electrode, and flow rate and pressure of the monomer utilized (col. 7, lines 59-64), hence it would've been obvious to one of ordinary skill in the art to consider such conditions & employ routine experimentation when performing their various plasma processes, such that it would have been reasonably expected by one of ordinary skill in the art to employ powers within ranges claimed, as analogous processing for analogous results are being performed. It is further noted that since the plasma polymerization & postdeposition treatments taught will use specific parameters to achieve specific results,

Art Unit: 1715

as well as teachings concerning locations treated, the gaps with respect to the surface are inherently limited by parameters employed.

With respect to gases or gas mixtures employed performing the cross-linked barrier layer on the polymeric lens, col. 5, line 52-col. 7, line 23, discuss various mixtures effective therefore inclusive of using halogenated hydrocarbons with a boiling point less than 200°C, which is inclusive of liquid sources, as well as gaseous sources for the taught fluorinated hydrocarbons, thus the liquid options read on claimed plasma liquid reagents containing fluorine, with it further noted that the halogenated hydrocarbons plasmas may also employ hydrogen gas, which while not a noble = inert gas per se, is also not a deposition gas, but appears to be used as a plasma gas that is inert with respect to deposition. It would've been further obvious to one of ordinary skill in the art to employ inert gases analogously, as plasma gasses for their typical & conventional uses as carrier gases for the fluorocarbon gases, maintenance of the plasma discharge, as well as pressure & flow optimization, with a reasonable expectation of them performing analogously to the taught hydrogen gas, especially considering inert gases would provide analogously for employing no nitrogen or oxygen during the plasma polymerization crosslinking step, as discussed in col. 7, lines 20-23.

With respect to "water absorbing resin", it is considered that the created surface having a highly hydrophilic nature which provides long-lasting wettability, may be considered to read on this new limitation as the deposited polymeric material may be considered a resin & in the taught context wettability suggests the ability to absorb water. With respect to the capability of "retaining large quantities of a being containing aqueous solutions", bodily fluids to which contact lenses are exposed can contain amines (although they need not ever be so exposed) & since the lenses are hydrophilic & wettable, they may retain aqueous solutions, including such solutions which also contain amines, although whether or not they ever actually do so is not relevant to the present claims.

Art Unit: 1715

Note with respect to the glow discharge oxygen treatment, it is noted that such an oxidation method will inherently form among the species of the oxygen containing plasma some ozone, thus may be considered to read on the claimed ozonolysis.

With respect to the claim of a bulk matrix being polyolefin, while Peyman et al. do not specifically teach the copolymers to be employed with the silicone polymer materials, they do not limit what polymeric materials may be employed as copolymers, hence it would've been obvious to one of ordinary skill in the art to use polymeric material known to be desirable in lenses for various known properties desirable therefore, such as those listed in the background in columns 1-3, which encompass polymeric materials employing olefinic components, thus it would've been obvious to one of ordinary skill in the art to use such olefinic components as the generic copolymeric material suggested to be useful in the core substrates. As a substrate material is taught to be oxygen permeable, it is considered to be porous in the scope as defined by applicants' enormously broad & uncertain scope range of void volumes that describe porous for purposes of the present specification, and while no particular void volumes are specified by the specification, it would've been obvious to one of ordinary skill in the art that the lower and of the claimed range of void volumes would have reasonably been expected to overlap with such highly oxygen permeable polymeric lenses, in order for them to fulfill their taught capabilities.

17. **Claims 1, 3, 8, 13-16, 17-23 & 26** are rejected under 35 U.S.C. **102(b)** as anticipated by **Sano et al.** (4,265,959).

**Claims 9-10 & 16** are rejected under 35 U.S.C. **103(a)** as being obvious over **Sano et al.** (4,265,959).

Applicants argue that their preliminary crosslinking step is "of the material of the substrate", thus excludes Sano et al., and they further argue that it is not clear to them that gelation is crosslinking (page 17 of the 8/30/10 response. However, while the preparation of the acrylonitrile membrane is said to be not particularly limited (col. 2, lines 30-39), the usual casting of an acrylonitrile polymer is described on

Art Unit: 1715

col. 2, line 46-col. 3, line 11, where the acrylonitrile polymer is dissolved in an aqueous solution, then deposited (i.e. forming a substrate comprising crosslinkable material), with subsequent treating to cause both solvent evaporation & gelation, with further liquid application to effect porosity. As the starting material was acrylonitrile, with evaporation and gelation are taught as separate effects both occurring, the gelation is reasonably considered to be crosslinking, as the polymer molecules were previously formed. Applicants' arguments' have supplied no reason to expect it to be otherwise. It is not necessary for a reference to use identical terminology to that employed by applicants, in order to be disclosing the same effects. Furthermore, It is clear that the membrane material is capable of crosslinking as discussed in col. 4, lines 28- 52, etc.

As previously set forth, **Sano et al.** (abstract; col. 2, lines 1-39 col. 3, lines 7-50; examples) teach a **porous membrane**, on which various operation may be initially performed, inclusive of performing **gelation** (i.e. crosslinking) due to temperature (i.e. heat) to a **cast substrate**, where that porous membrane may be **subsequently plasma treated** the glow discharge employing gases, such as **hydrogen, He, Ar, nitrogen, oxygen,... ammonia, water**. (Reads on claim 1 or 13, steps (i) & (ii)). The porous membrane material is taught to be an acrylonitrile polymer, which may contain polyolefinic components, and where it is taught porosity, while not specifically disclosed, is considered that it must in order to be called porous be somewhere within the broad claimed range. Alternatively, it would've been obvious to one of ordinary skill in the art to employ a void volume in forming the taught porous membrane within typical ranges of what is considered porous, which would have been reasonably expected by one of ordinary skill in the art to be totally encompassed by applicants' range. Note that the exemplary plasma processes disclose a discharge voltage & a discharge current, implying use of DC plasma. While specific plasma powers are not employed it would've been obvious to one of ordinary skill the art to employ routine experimentation, depended on particular plasma apparatus & plasma gasses & relevant plasma parameters with respect thereto, reasonably expected to be inclusive of claimed powers, with it additionally noted



Art Unit: 1715

that particular power employed is not particularly relevant, as is the power density that makes a difference according to what is employed, since the same power may be applied to different volumes & areas to get extremely different effects. Sano et al. also discuss testing the results of their process examples for stability.

18. Applicant's arguments filed 8/30/10 & discussed above have been fully considered but they are not persuasive.

The examiner further observes, that contrary to applicants' various arguments an object may be formed or shaped, then crosslinked, then plasma treated, where what is being plasma treated is called the substrate, where such a substrate reads on a substrate comprising crosslinkable material that has been treated so as to cross-link it. For example, the examiner notes that **Peyman et al.** (4,312,575), discussed above, is employing various core soft contact lenses, such as core silicone lenses, whose construction is not discussed therein, presumably as its considered commonplace, as may be considered demonstrated by **Merrill** (3,916,033), **Wajs et al.** (3,959,102), **Nakada et al.** (5,670,594) & **Li et al.** (6,565,776 B1), all of whom create cores of lenses as may be employed in the process of Peyman et al., with various discussions of crosslinking of those core lenses, inclusive of processes that would read on applicants step (i). However, it is noted that for the claims as presently written, due to applicants incredibly broad and generic nomenclature, which as discussed above are inclusive of processes much broader than discussed by applicants, making such a reference combination would be totally and completely redundant at this time, but this discussion is put forth in the probably forlorn hope to applicants will seriously consider it, as well as above discussion & usefully amend their claims.

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1715

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

20. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is **(571) 272-1425**. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/  
Primary Examiner, Art Unit 1715

MLP/dictation software

1/3-5/2010